

Burrage (W. L.)

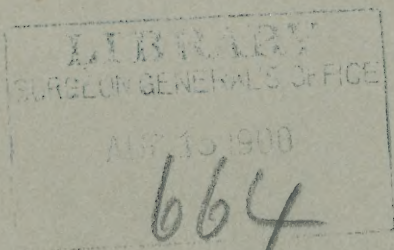
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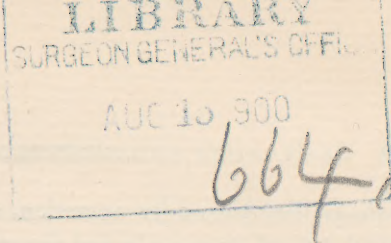
The Immediate and Remote Results of 71 Alexander and 71 Suspensio-uteri Operations.

BY
W. L. BURRAGE, M.D.,
BOSTON.



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THE IMMEDIATE AND REMOTE RESULTS OF SEVENTY-ONE ALEXANDER AND SEVENTY- ONE SUSPENSIO-UTERI OPERATIONS.

BY W. L. BURRAGE, M.D.,
Boston.

THE paper here presented is based on seventy-one Alexander and seventy-one suspensio-uteri operations performed by the writer during the six years from 1891 to 1897, inclusive, the first Alexander having been done August 7, 1891, and the first suspension August 1, 1893, so that a majority of the Alexanders were performed in the earlier years of this period and a majority of the suspensions in the later years. The facts in this paper are from my private operation-records written by myself on the day of the operation, with very few exceptions, and during the subsequent convalescence and whenever the patient again came under observation. With three exceptions, all of the 142 patients were examined by me personally at the time of their discharge, two or three weeks after the operation, and notes made of the existing condition. These notes form the basis of the immediate results here chronicled. For the remote results the patients were examined at least three months after their operations, for the most part by the writer, but in several instances where the patients were at a distance by their attending physicians, who kindly reported the results to me. Sixteen patients it was impossible to trace at all, and seven were reported as being free from uterine symptoms, or wrote me to that effect. Reliable statistics were obtained from sixty-two Alexander and sixty suspension cases, 122 out of 142 cases. None of the patients died as a result of the operation. Three, upon

whom the Alexander operation was performed, have since died, two of pneumonia and the other of unknown causes.

THE ALEXANDER OPERATION. Sixty-four operations. **Technique:** Locate pubic spine by touch. Incision six centimetres long, nearly parallel with Poupart's ligament, the lower end of the incision being at the pubic spine. Dissection of the subcutaneous fat layers until the glistening fibres of the aponeurosis of the external oblique are brought into view. All the structures in the external abdominal ring are seized with tissue-forceps and drawn up. Here it may be said in passing that the author has never failed to find the ligament. A small hook is passed under all the tissues, and is then replaced by the operator's finger. The nerve is separated from the ligament and drawn to one side. Traction is made on the ligament, and after it has been pulled out to its uterine enlargements the same procedure is adopted with the ligament on the opposite side, the uterus is anteverted by bimanual touch, and the ligaments are anchored to the pillars of the ring by two ligatures of fine silk to each pillar. Silk-worm-gut, kangaroo tendon, and chromicized catgut were used in some instances, but fine silk as a general rule. If the ligament is much bruised it is cut off, otherwise it is left in the wound. The wounds are closed with interrupted sutures of silkworm-gut passing through skin and fat, and catching up a few fibres of the aponeurosis of the external oblique so as to leave no dead space. Some of the wounds were closed with a continuous suture of either catgut or silk-worm-gut passed subcutaneously. The dressings consist of dry powder, aristol, or sterilized nosophene dusted on the wound, and dry gauze stuck to the skin with corrosive collodion, to prevent contamination of the wound from the patient's fingers or the subsequent shifting of the dressing.

EDEBOHLS' METHOD. Seven operations. Slightly longer incision. Inguinal canal laid open by dividing the aponeurosis of the external oblique in the direction of Poupart's ligament up to the internal abdominal ring. Isolation of the

round ligament in the canal by means of hooks, and separation of the nerve. Drawing out of the round ligament up to its uterine enlargement and stripping back of the peritoneal investment. After the other ligament has been shortened the position of the fundus uteri is verified by the operator's little finger passed through the internal ring. The edge of the internal oblique muscle is stitched to Poupart's ligament by a continuous suture of chromicized catgut, No. 2, the needle passing through the round ligament with each stitch, and thus securely anchoring it. The aponeurosis of the external oblique is closed with the same stitch, which is tied with its other end at the upper limit of the wound in the aponeurosis. By this procedure there is only one knot in the entire operation. The ligament is cut off at the external ring. The wounds are closed and the dressings are applied in the same way as in the other method.

Although the Alexander operation was primarily intended for cases of retroversion without adhesions, its field has been amplified in my hands by performing it in conjunction with posterior colpotomy in cases of moderate adhesions. This was done in nine of my cases with good results. The colpotomy proved especially useful where the utero-sacral ligaments were tight. Where the ovaries were prolapsed and free from adhesions the Alexander operation, in certain cases, has restored them to a normal position, but when adherent, or when the ovarian ligaments have been found to be long, it has not done so in a majority of cases even with the aid of colpotomy.

A glance over the tabulated statistics of the seventy-one Alexander operations shows that thirty-four are cases of retroversion free from adhesions, seven of retroflexion free from adhesions, twenty-eight of retroversion or retroflexion with some adhesions or with tight utero-sacral ligaments, and two of procidentia. One or both ovaries were noted as being prolapsed in sixteen cases. An inguinal hernia existed on one side in two cases, and a radical cure was effected in the course

of the Alexander operation in each case. Curetting of the uterine cavity was done in every case. Amputation of the cervix and the ligature operation for hemorrhoids were each done once. Trachelorrhaphy and perineorrhaphy were performed together seven times, perineorrhaphy alone six times, and trachelorrhaphy alone nine times.

The immediate results of the seventy-one Alexander operations were good in all but six, 92 per cent. Of these six, one only was a total failure, the other five being classed as fair. The cause of the failure is not plain, as the ligaments were of good size, were anchored with silk, and the wounds healed by first intention. One ligament broke off in the course of the operation in five cases. As a result, the uterus was in the first degree of retroversion at the time of the patient's discharge in three, and later, completely retroverted in all except one. This patient went through a normal labor one year and five months after the operation, and subsequently the uterus was in good position and well involuted. The first four cases, taken together with one in which there was only one ligament to shorten because of a previous ovariectomy, and in which there was an ultimate failure, would argue against trusting to one ligament to hold the uterus in place. In one or two other cases the ligament broke during the operation, and was recovered by opening the entire inguinal canal and fishing for the ligament through the internal ring. In the one Edebohls' operation where the cord gave way at its uterine insertion, the fault was due to using too great force in pulling on a fatty cord in a fleshy patient through an error in not appreciating that the fundus uteri was already well up.

Pregnancy following operation has taken place in twelve cases, 19 per cent. The pregnancy and labor were both normal in five of these. Of the remaining seven, one had a tedious labor terminated by forceps, and, following that, three miscarriages. Six years after the operation the uterus was found retroverted. It was noted in this case, at the time of her discharge from the hospital after the Alexander

operation, that from the one-sided position of the uterus one ligament had probably given way. In another there was prolonged suppuration in the wounds and the silkworm-gut ligatures which had anchored the ligaments came out. Here the uterus was found retroverted in early pregnancy. Another patient miscarried at seven months, from overwork. The uterus was subsequently in good position. Another had pain in the left groin while pregnant, and her labor was slightly tedious. The uterus was in good position afterward. Another is now pregnant in the early months, while still another was eight months' pregnant when last seen and had had no unusual symptoms. Another had a normal pregnancy, but the labor was long and the placenta was adherent, requiring manual extraction, which was followed by sepsis. Five weeks after labor the uterus was found retroverted and adherent, a condition not to be wondered at in the light of the sequelæ of the confinement. One year later the uterus was in good position. To sum up: Pregnancy and labor were both normal in five cases; pregnancy was noted as being abnormal in the remaining cases three times; labor abnormal three times; pregnancy normal three times, and labor normal once. Abortion resulted from the operation in no case. The uterus was retroverted following labor in three cases.

The tables show that out of sixty-two cases examined the ultimate results were good in forty-nine, 79 per cent., and failures in thirteen, 21 per cent. The other nine cases were classed as unknown. It is to be remembered that of the thirteen failures, six were immediate partial or complete failures also, leaving seven cases in which the uterus became retroverted subsequent to the discharge of the patient. Three of these became retroverted, as already stated, after a subsequent labor. It is noticeable also that all of the immediate partial or complete failures were afterward traced, and the results appear again in the list of ultimate failures. The large percentage of ultimate failures is to be attributed to lack of skill on the part of the operator, most of the failures

being among the earlier cases, and to the fact that the operation was sometimes performed in unsuitable cases.

A left inguinal hernia followed the Alexander operation in two instances. In one the cords were slender and the rings normal in size, while in the other the cords were very large and the rings large. The ligaments were anchored with catgut in both cases. In both the uterus was in good position ultimately. Pain in the scars followed the earlier operations where the nerves were not carefully separated from the cords, but not in the later operations. No bladder symptoms as resulting from the operation have been noted in any of the cases.

THE SUSPENSIO-UTERI OPERATION. Technique: For convenience of description the seventy-one cases may be divided into (1) those in which the uterus was suspended by attaching the fundus uteri to the parietal peritoneum, and (2) those in which suspension was accomplished by sewing the round or ovarian ligaments to the parietal peritoneum.

1. Of this class there were fifty-eight cases, divided into eleven for the posterior face of the fundus, eleven for the top of the fundus, and thirty-six for the anterior face of the fundus. Permanent ligatures of silk or silkworm-gut passing through muscle and fascia as well as peritoneum, and constituting ventral fixation, were employed only seven times. Both ovaries and tubes were removed in two of these and one or both ovaries resected in the others. It is interesting to note here that only one of these ventral fixation cases has since become pregnant, and she was reported by her physician as having had pain during early pregnancy, but later to be entirely free from it. This was a case of extensive suppuration following pelvic abscess, where the adhesions between the fundus and the parietes must have been very dense.

Since the above was written this patient has gone through a perfectly normal labor, and the uterus is now in good position.

The usual method of operating is as follows: Unless there is much work to do in the pelvis in the way of operating on the ovaries and tubes, the incision is short, six centimetres,

in the median line, with its lower end not nearer than three centimetres to the symphysis pubis. The uterus is brought up to the abdominal wound by two fingers of the operator's left hand. A slender, full-curved needle with a round point, and threaded with a carrying thread, is passed through the transversalis fascia and peritoneum at a distance of one centimetre from the right edge of the incision, then through a deep bite of the fundus uteri, and finally through the peritoneum and transversalis fascia on the left edge of the incision. The carrying thread is used to draw through a strand of No. 2 or No. 3 chromicized catgut. Two or three stitches are inserted, that through the top of the fundus being quite superficial in the uterine tissue. Care is observed in not interfering with the uterine ends of the tubes and in not attaching the fundus too close to the pubes. Tying the uterine sutures closes the peritoneum except for a short space in the upper part of the wound, which is closed with a continuous stitch of fine catgut. The linea alba is dissected out and the bellies of the recti are approximated by two or three interrupted stitches of No. 2 chromicized catgut, each stitch catching up the underlying peritoneum so as to leave no dead space. The fascia is closed by a continuous suture of the same material and the skin by a subcutaneous right-angled silkworm-gut suture. Dressings of dry powder on the line of the wound and dry sterile gauze stuck to the surrounding skin by corrosive collodion.

2. By the round or ovarian ligaments, thirteen cases, eight of the former and five of the latter. The incision into the peritoneal cavity is the same as in suspension of the fundus. If by the round ligaments, the ligament on one side is pierced at a point three centimetres from the uterus by a round-pointed, full-curved needle carrying fine silk. The needle is then made to pierce the peritoneum and overlying transversalis fascia at a point two centimetres outside of the line of the abdominal incision and five centimetres from the symphysis pubis. Another stitch is placed on this side and two similar stitches on the opposite ligament, and all are tied. In

cases where the ovarian ligaments are very long, allowing complete prolapse of the ovaries, the same procedure is carried out with the ovarian ligaments as with the round ligaments, two fine silk stitches to each ligament being used. The abdominal wound is closed and dressed as in the other form of suspension.

Glancing over the tables it appears that in forty cases suspension was done for retroversion, retroflexion, or retroposition, accompanied by more or less extensive adhesions; in nineteen cases for retroversion, retroflexion, or retroposition without adhesions; in six cases for prolapse; and in six cases to prevent ovarian prolapse, or, after the removal of severe grades of inflammatory affections of the ovaries and tubes, to prevent retroversion of the uterus into the raw surface left by their removal. Both tubes and ovaries were removed in thirteen cases, one ovary in thirty-four cases, the ovaries and tubes were resected in seventeen cases, and nothing was done to the ovaries or tubes in fifteen cases. Every effort was made to preserve some healthy ovarian tissue and, considering the severity of many of the cases, the number in which both ovaries and tubes were removed is a small one.

The immediate results were good in every one of the seventy-one patients except that five had mural abscesses. As far as the uterus was concerned it was suspended in good position at the time of the patient's discharge. As regards symptoms, the pain immediately following was inconsiderable in almost all. A few patients complained of a drawing feeling in the uterine region on coughing and sneezing during the first days after being up and about. In no case was there interference with micturition.

Subsequent pregnancy has resulted in seven cases, or 12 per cent. Of these, five women have had normal pregnancies and normal labors, and one of them is now five months' pregnant for the second time, and is not having pain. The remaining two of the seven are now pregnant. One, four months along, is having no special symptoms to mark this pregnancy from her former ones; the other, six months along,

has already been referred to as having had pains, but as now free from them.

In the five cases in which normal pregnancy and labor had taken place the uterus was found in good position two months after labor in one, a case of suspension by the anterior face of the fundus, and in another, a case of suspension by the round ligaments, the uterus was found retroverted two years later. One of the remaining three is now pregnant again, and of the other two it has been impossible to obtain the facts because the patients live at a distance.

When we take into account the fact that a majority of the suspension operations have been done during the past year and a half, it is not surprising that fewer of these women have become pregnant than has been the case with those upon whom the Alexander operation was performed, to say nothing of the suspension operation having been accompanied by the removal of one or both ovaries in 66 per cent. of the cases as against the Alexander, in which with the exception of one, the ovaries and tubes were not operated upon.

Of the sixty patients examined as to ultimate results, the results were good in fifty-six and bad in four. Four of the twelve patients counted as unknown wrote that they were relieved of their symptoms. Not including these, we have 93 per cent. of good results and 7 per cent. of failures. Only one of the failures followed pregnancy, and that one was a case of suspension by means of the round ligaments. In another, also a suspension by means of the round ligaments, the ligaments gave way ultimately. The other two suspensions were by the anterior and top of the fundus. In one there was suppuration in the wound, while in the other the union was by first intention, but there was a question as to the patient having had an abortion not long after the operation. There was a small hernia in the cicatrix in one case two years after the operation. There had been suppuration in this wound while the patient was in the hospital. In no case were there symptoms pointing to strangulation of a loop or loops of intestine due to the suspending ligaments or bands.

TABLE I.—ALEXANDER OPERATIONS.

No.	Name.	Age	Social condition	Children or abortions	Condition of uterus, adhesions.	Condition of ovaries.	Other operations performed at same time besides curetting.	Immediate anatomical results.	Pregnancy following.	Remote anatomical results.
1	P. McK.	26	Married	0 child. 0 abort.	Retroversion with adhesions.	Right prolapsed; left ovary removed at a previous operation.	.....	Good as to uterus; ovary prolapsed.	No.	Failure; uterus retroverted five months later, and suspensio uteri.
2	M. H.	35	Married	0 child. 0 abort.	Retroversion with tight utero-sac. ligaments.	.....	.....	Good; one ligament gave way.	Tedious labor with post-partum hemorrhage 1 yr. later.	Retroverted 6 years later; two miscarriages at seven months; and one at four months, since operation.
3	J. H.	22	Single	.....	Retroversion with tight utero-sac. ligaments.	Left prolapsed and adherent.	.....	Good; ovary prolapsed.	.....	Unknown.
4	K. A.	32	Single	.....	Retroversion; free.	Right prolapsed and adherent.	.....	Good; ovary prolapsed.	.....	Good three months later.
5	H. S.	33	Married	1 child.	Retroversion; free.	.....	Perineorrhaphy.	Good; long suppuration in Alexander wounds.	Normal pregnancy and labor 1 yr. later.	Uterus retroverted in early pregnancy.
6	B. McL.	30	Married	2 child.	Retroversion with adhesions.	Both prolapsed and degenerated.	Perineorrhaphy.	In first degree of retroversion.	No.	Uterus retroverted 2 years later, and pan-hysterectomy.
7	I. McC.	19	Single	.....	Retroversion; free.	.....	.....	Good.	No.	Good 5½ years later.
8	F. S.	26	Widow	2 child.	Retroversion; free.	.....	.....	Good.	.....	Unknown.
9	A. G. L.	20	Single	.....	Retroversion; free.	.....	.....	Good.	.....	Good four months later.

10	M. M.	55	Married	2 child.	Procidencia, cervix projecting 6 cm. from vulva.	.....	For hemorrhoids.	Uterus in- side pelvis in first de- gree of re- troversion.	No.	Wearing pessary with com- fort five years later; uterus up.
11	M. S.	23	Single	.....	Retroposited and ante- flexed.	Left pro- lapsed; free.	.....	Good.	No.	Good one year and three months later; left ovary prolapsed
12	M. K.	23	Single	.....	Retroversion with tight utero-sac. ligament.	.....	.....	Good.	.....	Good four months later.
13	M. O'B.	23	Single	.....	Retroversion; free.	Both cystic	.....	Retro- verted.	No.	Failure; both ovaries re- moved six months later.
14	S. D.	34	Married	0 child. 1 abort.	Retroversion with adhesions; uterus large.	.....	.....	Good.	No.	Uterus in first degree retro- version one year and two months later.
15	K. S.	30	Married	0 child. 0 abort.	Retroversion with adhesions.	.....	.....	Good.	No.	Good five years and six months later.
16	J. S.	27	Married	0 child. 0 abort.	Retroversion; tight utero-sac. ligaments.	.....	.....	Good.	No.	Good five years and six months later.
17	A. McF.	26	Married	3 child. 1 abort.	Retroversion; free.	.....	Trachelorrhaphy.	Good.	.....	Good one year later.
18	J. McN.	34	Married	0 child. 0 abort.	Retroversion; tight utero-sac. ligaments.	.....	.....	Good.	.....	Good eight months later.
19	J. L.	21	Married	0 abort. 0 child.	Retroversion; free.	Both pro- lapsed.	.....	Good.	.....	Good four months later.
20	M. C.	39	Single	.....	Retroversion; tight utero-sac. ligaments.	.....	.....	Good.	No.	Good four years and seven months later.
21	W. McS.	32	Married	2 child. 0 abort.	Retroversion; free.	.....	Perineorrhaphy (rt. ligament broke and not found). Trachelorrhaphy, perineorrhaphy.	Good.	No.	Uterus retroverted two years later.
22	M. McG.	26	Married	2 child.	Retroflexion; free.	.....	Trachelorrhaphy.	Good.	No.	Good one year and six months later; left in- ginal hernia.
23	I. B. J.	33	Married	3 child. 0 abort.	Retroflexion; free.	.....	Trachelorrhaphy.	Good.	No.	Good 2½ years later.
24	M. F.	23	Single	.....	Retroversion; free.	.....	Catgut used.	Good.	.....	Good six months later.
25	E. O.	35	Married	2 child.	Retroversion; free.	.....	Trachelorrhaphy.	Good.	.....	Unknown.

12 ALEXANDER AND SUSPENSIO-UTERI OPERATIONS.

No.	Name.	Age	Social condition	Children or abortions	Condition of uterus.	Condition of ovaries.	Other operations performed at same time besides curetting.	Immediate anatomical results.	Pregnancy following.	Remote anatomical results.
26	M. G.	28	Married	1 child.	Retroversion ; free.	.....	Catgut used.	Good.	Normal pregnancy and labor 1 yr. 8 mo. later.	Good three years and eight months later.
27	E. C.	22	Single	.....	Retroversion ; free.	.....	.....	Good.	.....	Unknown.
28	M. F.	35	Married	.....	Retroversion ; free.	.....	Right ligament broke near uterine end.	Uterus in first degree of retroversion.	No.	Uterus retroverted three years and six months later.
29	A. M.	23	Single	.....	Retroversion ; free.	.....	.....	Good.	No.	Good one year later.
30	B. K.	32	Single	.....	Retroversion ; free.	.....	Catgut used.	Good.	No.	Good eight months later.
31	C. C.	34	Married	1 child.	Retroversion ; tight utero-sac. ligaments.	Right prolapsed.	Large rings, large cords, chr. catgut used.	Good.	.....	Good four months later ; left inguinal hernia.
32	A. H.	19	Single	1 child.	Retroversion ; free.	Double tubo-ovarian, chr.	.....	Good.	.....	Good three years later ; hematocele from ruptured tube ; removal of tubes and ovaries.
33	M. C.	29	Married	0 child. 9 abort.	Retroversion with antelexion.	.....	Catgut used.	Good.	No.	Good three years and six months later.
34	M. S.	16	Single	.....	Retroversion with antelexion.	.....	Catgut used.	Good.	.....	Good six months later.
35	B. H.	29	Married	2 child.	Retroversion ; free.	.....	.....	Good.	.....	Unknown ; three yrs. later heard she was dead.
36	C. O' C.	46	Single	.....	Retroversion with adhesions.	.....	Left ligament broke in outer part.	Uterus in first degree of retroversion.	No.	Uterus retroverted two yrs. and six months later.
37	C. G.	36	Married	2 child. 3 abort.	Retroversion ; free.	Both prolapsed.	Amputation of cervix.	Good.	No.	Good two years and nine months later ; ovaries in place.

14 ALEXANDER AND SUSPENSIO-UTERI OPERATIONS.

No.	Name.	Age	Social condition	Children or abortions	Condition of uterus.	Condition of ovaries.	Other operations performed at same time besides curetting.	Immediate anatomical results.	Pregnancy following.	Remote anatomical results.
51	A. C.	39	Married	1 child.	Retroversion ; free.	.....	Perineorrhaphy.	Good.	No.	Good one year and eleven months later.
52	M. F.	26	Married	4 child.	Retroflexion ; free.	.....	Trachelorrhaphy, perineorrhaphy.	Good.	Pregnant 1 yr. 11 mo. later.	Unknown.
53	A. C. B.	30	Married	3 child. 0 abort.	Retroflexion ; free.	.....	Trachelorrhaphy, perineorrhaphy.	Good.	Pregnant 1 yr. 7 mos. later ; pain in il. groin ; lab. slightly tedious.	Good one year and ten months later.
54	M. A.	29	Married	2 child.	Retroflexion ; free.	.....	Trachelorrhaphy.	Good.	.....	Unknown ; symptoms relieved.
55	D. R.	38	Married	7 child. 2 abort.	Retroversion ; free.	.....	Lt. ligament broke at uterine end ; trachelorrhaphy, perineorrhaphy.	Good.	Normal pregnancy and labor 1 yr. 5 mos. later.	Good one year and ten months later.
56	S. C.	32	Married	1 child.	Retroversion ; free.	.....	Trachelorrhaphy, perineorrhaphy.	Good.	No.	Good one year and four months later.
57	S. M.	28	Single	.....	Retroversion ; free.	Both prolapsed.	.....	Good.	No.	Good two years later.
58	H. B.	38	Married	4 child. 2 abort.	Procidencia.	.....	Trachelorrhaphy, perineorrhaphy.	Good.	No.	Good one year and six months later.
59	A. L.	29	Married	5 child. 1 abort.	Retroversion ; free.	Both prolapsed.	.....	Good.	Normal pregnancy 1 yr. 5 mos. later.	Eight months pregnant one year and five months later.
60	M. C.	24	Married	1 child. 0 abort.	Retroversion ; free.	Both prolapsed and adherent.	Post. colpotomy and new ostia to tubes ; trachelorrhaphy.	Good.	No.	Good one year and five months later ; right ovary prolapsed.

	A. McN.	38	Married	5 child.	Retroversion ; free.	.....	Trachelorrhaphy.	Good.	Normal pregnancy; tedious labor and adherent placenta. 1½ yr. later. No.	Uterus retroverted five weeks after labor. In good position one year and seven months later.
61										
62	E. H.	46	Married	9 child. 1 abort.	Retroversion ; free.	.....	Trachelorrhaphy, perineorrhaphy.	Good.	Good one year and five months later.	
63	A. O'D.	25	Married	2 child. 2 abort.	Retroflexion ; free.	.....	Trachelorrhaphy (kangaroo tendon used).	Good.	Uterus retroverted one y'r and five months later.	
64	M. D.	25	Single	.....	Retroversion ; free.	Both pro- lapsed; rt. adherent. Right pro- lapsed.	.....	Good.	Uterus retroverted in seven months.	
65	A. C.	25	Single	.....	Retroversion with ante- flexion ; large uterus.	.....	.....	Good.	Good nine months later.	
66	A. L.	34	Married	1 child. 0 abort.	Retroflexion ; prolapse.	.....	Post. colporthaphy (right ligament broke).	First de- gree retro- version. Good.	Uterus retroverted in one month.	
67	M. B.	30	Married	2 child. 1 abort.	Retroversion ; free.	.....	Trachelorrhaphy.	Good.	Good one year and seven months later.	
68	B. B.	35	Married	1 child. 2 abort.	Retroversion ; tight utero-sac. ligaments.	.....	Trachelorrhaphy.	Good.	Unknown.	
69	M. C.	23	Single	.....	Retroversion ; tight utero-sac. ligaments.	.....	Post. colpotomy and division of ligaments.	Good.	Good nine months later.	
70	B. M.	22	Single	.....	Retroversion ; tight utero-sac. ligaments.	.....	Post. colpotomy and ligaments divided.	Good.	Good seven months later.	
71	B. R.	28	Married	1 child. 0 abort.	Retroversion with ante- flexion.	.....	Post. colpotomy and ligaments divided.	Good.	Good three months later.	

TABLE II.—SUSPENSIO-UTERI OPERATIONS.

No.	Name.	Age.	Social condition.	Children or abortions	Condition of uterus.	Condition of ovaries.	Ovaries resected or removed.	Method of suspension.	Immediate anatomical results.	Pregnancy following.	Remote anatomical results.
1	I. F.	29	Marr'd	3 child. 0 abort.	Retroposition ; free.	Both prolapsed and cystic.	Cyst punctured.	By round ligaments.	Good.	Normal pregnancy and labor 4 y. 6 mo. later.	Good four years later, seven months after labor.
2	J. F.	26	Marr'd	0 child. 0 abort.	Retroversion ; free.	.....	.....	By round ligaments.	Good.	No.	Good two years later.
3	T. F.	27	Marr'd	1 child. 0 abort.	Retroversion with adhesions.	Double tubo-ovary with pus.	Both resected.	By round ligaments.	Good.	No.	Good one year later.
4	P. McK	28	Marr'd	0 child. 0 abort.	Retroversion with adhesions.	Rt. prolapsed and adherent ; band adhesions.	Former removal of left ovary ; right resected ; moved.	By round ligaments.	Good.	No.	Uterus retroverted nine months later
5	E. C.	28	Marr'd	1 child.	Retroversion with adhesions.	Double tubo-ovary.	Left resected ; right resected ; moved.	By round ligaments.	Good.	No.	Good nine months later.
6	R. McC	27	Single	.....	Retroposition with antelex'n.	Lt. prolapsed, cystic.	Cyst punctured.	By round ligaments.	Good.	No.	Good ten months later.
7	N. G.	28	Marr'd	4 child.	Retroflexion ; free.	Both prolapsed.	.....	By round ligaments.	Good.	Normal pregnancy and labor 1 year later.	Uterus retroverted two years later.
8	M. L.	27	Marr'd	1 child.	Retroposition with adhesions.	Both prolapsed, cystic and adherent.	Tubes resected.	Top of fundus to muscle and fascia with silk.	Good, except supp'n.	No.	Good two years later ; small hernia in cicatrix.
9	M. C.	30	Marr'd	0 child. 1 abort.	Retroposition with adhesions.	Double tubo-ovary.	Left tube resected, rt. ovary removed.	Top of fundus with silk and temporary stitch.	Good.	.....	Unknown.

10	M. M.	28	Marr'd	0 child. 0 abort.	Retroversion with adhesions.	Double hy- drosalpinx.	Left ovary and tube resected, right re- moved.	Posterior fundus, one silk to muscle and fascia.	Good.	No.	Good three years and seven months later.
11	C. H.	23	Single	.....	Low in the pel- vis.	Left pro- lapsed.	Left re- moved.	By round ligaments.	Good.	No.	Good ten months later.
12	N. S.	25	Marr'd	2 child.	Low in the pel- vis.	Both pro- lapsed.	Left re- moved.	By ant. fundus with one chromicized catgut.	Good.	Normal pregn'cy and labor 3 years later.	Good two months after labor.
13	A. O'D.	29	Marr'd	0 child. 0 abort.	Retroversion ; free.	.....	.....	Top of fundus with chromicized catgut.	Good.	No.	Good three years and six months later.
14	S. K.	29	Single	.....	Retroversion ; free ; large uterus.	.....	.....	Temporary stitches of silk-worm-gut.	Good.	No.	Good three years and five months later.
15	N. M.	25	Single	.....	Retroversion with antelex'n.	A few adhe- sions about right ovary.	.....	Catgut to both sides ant. fundus, and temporary stitch.	Good.	Normal pregn'cy and labor 1 y. 8 mo. later.	Five months preg- nant two years and ten months later ; no pains.
16	E. S.	36	Marr'd	0 child. 1 abort.	Retroversion with adhesions.	Double tubo- ovary.	Both re- moved.	Two silk-worm-gut to top of fundus, muscle and fascia.	Good.	No.	Good eight months later except sinus in wound.
17	B. D.	54	Marr'd	.....	Prolapse ; retro- version.	Small cyst of left ovary.	Both re- moved.	Two silk-worm-gut to post. fundus, muscle and fascia.	Good.	.....	Unknown.
18	A. E. P.	35	Marr'd	1 child. 0 abort.	Retroflexion ; prolapse.	Both pro- lapsed and adherent.	Right tube resected, left re- moved.	By ovarian liga- ments.	Good.	No.	Unknown.
19	N. S.	32	Marr'd	0 child. 0 abort.	Retroversion with antelex'n.	Double tubo- ovary.	Both re- moved.	Two silk to each side of post. fundus.	Good.	No.	Good two years and eight mos. later.
20	K. L.	19	Marr'd	1 child.	Good position ; fixed.	Double pyo- salpinx.	Both re- moved.	Two silk to each side of post. fundus.	Good.	.....	Unknown.
21	E. J. B.	29	Marr'd	2 child. 2 abort.	Good position.	Both pro- lapsed.	.....	By ovarian liga- ments.	Good.	No.	Good eight months later and two yrs. eight mos. later writes symptoms entirely relieved.

18 ALEXANDER AND SUSPENSIO-UTERI OPERATIONS.

No.	Name.	Age.	Social condition.	Children or abortions	Condition of uterus.	Condition of ovaries.	Ovaries resected or removed.	Method of suspension.	Immediate anatomical results.	Pregnancy following.	Remote anatomical results.
22	M. S.	36	Marr'd	1 child.	Retroversion with adhesions.	Double tubo-ovariis.	Right removed.	Two silk to left top of fundus and one to right top of fundus.	Good.	No.	Good two years four mos. later.
23	M. W.	23	Marr'd	0 child. 3 abort.	Retroposition with adhesions.	Double tubo-ovariis.	Left removed.	Two silk to post. fundus and same to right ovarian ligament.	Good.	No.	Good one year and six months later; right ovary removed two years later.
24	M. E.	29	Marr'd	1 child.	Good position.	Right tubo-ovariis; left prolapsed.	Right removed.	Silk to left ovarian ligament and right pedicle.	Good.	.....	Unknown.
25	E. I.	33	Marr'd	2 child. 3 abort.	Good position.	Both prolapsed; right adherent.	Right removed.	Silk to left ovarian ligament and right pedicle.	Good.	No.	Good three months later, and symptoms relieved two years.
26	D. H.	30	Marr'd	1 child. 1 abort.	Retroposition with adhesions.	Double tubo-ovariis.	.....	Two silk to post. fundus, gauze drainage.	Good, except suppurin.	No.	Good four months later; sinus in wound.
27	B. E. C.	35	Marr'd	1 child. 2 abort.	Retroposition; free.	Both cystic.	Cysts punctured.	By ovarian ligaments.	Good.	No.	Good two years later.
28	C. A. T.	40	Marr'd	1 child. 1 abort.	Prolapse; retroversion.	Large ovarian cystoma.	Left removed.	Two worm-gut to posterior fundus.	Good.	No.	Writes is perfectly well two years later.
29	L. A.	25	Marr'd	1 child.	Retroposition with ante flex'n.	Small cyst of right.	Right removed.	Two silk to posterior fundus, muscle and fascia.	Good.	Normal pregnancy and labor 2 y. 1 mo. later.	Good four months later; one silk came out of sinus four months after operation.
30	S. N.	25	Marr'd	3 child. 0 abort.	Retroversion; free.	Both cystic.	Right resected; left removed.	Silk to anterior fundus.	Good, except pelvic abscess and adhes'ns.	Preg with pain in early mos. 1 y. 10 mo. later; normal labor.	Good years later, after labor.

31	H. M.	23	Marr'd	0 child. 0 abort.	Retroposition with adhesions. Syphilis.	Hæmatoma of right ovary.	Right re- moved.	One silk to each side of post. fundus.	Good.	No.	Good; other ovary removed one year later, and uterus removed 1½ yrs. later by another operator.
32	B. C.	27	Marr'd	4 child. 2 abort.	Retroversion with adhesions.	Double tubo- ovariis.	Both ovaries.	Two silk and tem- porary suture to top of fundus.	Good.	No.	Writes is perfectly well one year and eight mos. later.
33	E. K.	45	Marr'd	0 child. 0 abort.	Retroflexion; large uterus.	.....	Both ovaries.	One silk to each side of post. fundus.	Good, except mural abscess.	No.	Good; uterus small one year and five months later.
34	M.C.G.	21	Single	.....	Good position.	Both pro- lapsed.	.....	By ovarian liga- ments.	Good.	No.	Writes is perfectly well one year and six months later.
35	D. T.	24	Marr'd	0 child. 0 abort.	Retroversion; free.	Both cystic.	Right re- sected; left re- moved.	Three silk to ant. fundus.	Good.	No.	Good one year and four months later
36	A. R.	30	Marr'd	2 child. 0 abort.	Retroversion; free.	Both cystic.	Left re- sected.	Three silk to ant. fundus.	Good.	No.	Good one year and four months later
37	E. C.	33	Widow	1 child. 0 abort.	Retroversion with adhesions.	Double tubo- ovariis.	Both re- moved.	Two silk to ant. fundus.	Good.	No.	Good one year and five months later.
38	J. McD.	21	Marr'd	1 child. 0 abort.	Retroposition; free.	Both cystic and enlarged.	Both re- moved.	Two kangaroo ten- don to anterior fundus.	Good.	No.	Good one year and four months later
39	S. B.	39	Marr'd	2 child. 7 abort.	Retroversion with adhesions.	Both cystic.	Cysts punc- tured rt.; left re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good one year and two months later.
40	A. M.	27	Marr'd	4 child. 0 abort.	Retroversion; free.	Both cystic.	Cysts punc- tured.	Three chrom. catgut to ant. fundus.	Good.	Pregnant 4 months, 1 y. later, no pains.	Good one yr. later.
41	S. A.	27	Marr'd	1 child. 0 abort.	Retroposition with adhesions.	Double hy- drosalpinx; ovariis rt.	Resection of it tube; right re- moved.	Two chrom. catgut to top of fundus.	Good, except mural abscess.	No.	Retroposited one year and two months later.
42	M. C.	36	Marr'd	1 child. 3 abort.	Retroversion with adhesions.	Double tubo- ovariis.	Both re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good ten months later.

20 ALEXANDER AND SUSPENSIO-UTERI OPERATIONS.

No.	Name.	Age.	Social condition.	Children or abortions	Condition of uterus.	Condition of ovaries.	Ovaries resected or removed.	Method of suspension.	Immediate anatomical results.	Pregnancy following.	Remote anatomical results.
43	A. R.	26	Marr'd	0 child. 0 abort.	Retroversion with adhesions.	Right cystic.	Right removed.	Three chrom. catgut to ant. fundus.	Good.	No.	Good ten months later.
44	L. S.	22	Single	1 child. 0 abort.	Retroversion with anteflex'n.	Right cystic.	Right removed.	Three chrom. catgut to ant. fundus.	Good.	No.	Good ten months later.
45	K. C.	28	Single	.....	Retroversion with anteflex'n.	Both cystic.	Rt. remov. cysts in lt. punctured.	Two chrom. catgut to ant. and top of fundus.	Good.	No.	Good seven months later; left ovary enlarged.
46	A. C.	49	Marr'd	8 child.	Retroflexion; prolapse.	Atrophic.	.....	Three chrom. catgut to top of fundus, muscle and fasciæ.	Good.	.....	Unknown.
47	J. R.	39	Marr'd	6 child.	Retroversion; prolapse.	.....	.....	Three chrom. catgut to ant. and top of fundus.	Good.	No.	Good seven months later.
48	M. F.	30	Single	.....	Retroflexion with adhesions.	Rt. ovaritis, lt. adherent.	Cysts punctured; lt. removed.	Two chrom. catgut to top of fundus.	Good.	No.	Good three months later.
49	M.B.H.	40	Marr'd	2 child.	Retroversion; free.	.....	Both removed.	Three chrom. catgut to top of fundus.	Good.	No.	Good five months later.
50	J. P.	32	Marr'd	3 child. 0 abort.	Retroversion; free.	Both prolapsed.	.....	Three chrom. catgut to ant. fundus.	Good.	No.	Good three months later.
51	M. C.	28	Marr'd	0 child. 0 abort.	Retroversion with adhesions.	Double tubo-ovariitis.	Left removed.	Two chrom. catgut to ant. fundus.	Good.	No.	Good six months later.
52	M. M.	22	Single	.....	Retroversion; free.	Both cystic.	Cysts punctured.	Two chrom. catgut to ant. fundus.	Good.	No.	Good seven months later.
53	C. G.	21	Single	.....	Retroversion with anteflex'n.	.....	Right resected; utero-sac, ligaments cut.	Two chrom. catgut to ant. fundus.	Good.	No.	Good three months later.
54	J. H.	28	Single	.....	Retroversion with anteflex'n.	Both cystic.	Right resected; cysts punctured.	Three chrom. catgut to ant. fundus.	Good.	No.	Good eight months later.
55	K. S.	33	Marr'd	1 child. 1 abort.	Retroversion with adhesions.	Double tubo-ovarian cysts.	Both removed.	Two chrom. catgut to ant. fundus.	Good.	No.	Good ten months later.
56	M. G.	30	Marr'd	0 child. 1 abort.	Retroversion with anteflex'n.	Double tubo-ovariitis.	Both removed.	Two chrom. catgut to ant. fundus.	Good.	No.	Good nine months later.

57	M. B.	21	Single	.....	Low in the pel- vis.	Left prolapsed; right cystic.	Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good six months later; left ovary low.
58	M. McH	26	Single	.....	Retroversion; free.	Both pro- lapsed and cystic.	Puncture of cyst.	Two chrom. catgut to ant. fundus.	Good, except mural abscess.	No.	Good seven months later.
59	S. K.	31	Single	.....	Retroversion with antelex'n.	Both pro- lapsed and cystic.	Punct. of cyst; utero- sac, liga- ments cut.	Two chrom. catgut to ant. fundus.	Good.	No.	Good five months later.
60	T. F.	31	Marr'd	0 child. 0 abort.	Retroversion with adhesions.	Right tubo- ovarian ab- scess; left prolapsed.	Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good seven months later; left ovary prolapsed.
61	K. O. T.	30	Marr'd	child.	Retroversion with adhesions.	Right pro- lapsed.	Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good four and half months later.
62	T. McD	20	Single	.....	Retroversion with antelex'n.	Both cystic.	Cysts punc- tured.	Two chrom. catgut to ant. fundus.	Good.	No.	Good five months later.
63	A. C.	21	Single	1 child. 0 abort.	Retroversion with antelex'n.	Right pro- lapsed.	Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	.....	Unknown.
64	N. D.	29	Marr'd	0 child. 0 abort.	Retroversion with antelex'n.	Right pro- lapsed.	Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good six months later.
65	K. Q.	30	Ma r'd	0 child. 0 abort.	Retroversion with adhesions.	Double tubo- ovariis.	Right tube resected; left re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good six months later.
66	M. G.	25	Marr'd	1 child.	Retroversion; free.	Both pro- lapsed and cystic.	Punct. of cysts, both suspended.	Two chrom. catgut to ant. fundus.	Good.	No.	Good four months later.
67	L. B.	23	Single	.....	Retroversion with antelex'n.	Right pro- lapsed.	Right sus- pended.	Two chrom. catgut to ant. fundus.	Good.	No.	Good six months later.
68	A. B.	23	Marr'd	0 child. 0 abort.	Retroversion with antelex'n.	Right pro- lapsed and cystic.	Rt. remov.; uterosc.	Two chrom. catgut to ant. fundus.	Good.	No.	Good four months later.
69	E. V.	24	Marr'd	1 child. 0 abort.	Retroversion and prolapse.	Both pro- lapsed; right salpingitis.	lig. divid'd. Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	Abort.? at 2 mo. 3 mo. later.	Uterus retroverted six months later.
70	K. F.	34	M r'r'd	3 child.	Retroversion with adhesions.	Right ovari- tis.	Right re- moved.	Two chrom. catgut to ant. fundus.	Good.	No.	Good four months later.
71	G. V.	27	Single	.....	Retroversion with antelex'n.	Right pro- lapsed and cystic.	Rt. remov.; utero-sac; ligaments divided.	Two chrom. catgut to ant. fundus.	Good.	No.	Good four months later.

In contrasting the Alexander with the suspension operation as to immediate and remote results one is impressed at the outset with the fallacy of statistics. We know that many of the Alexander operations were performed on patients upon whom, in the light of a larger experience, we should elect to do the suspension operation. A majority of the Alexander operations on my list were done so long before the suspensions that there has been with the former a longer period of time in which to allow of pregnancy occurring and for gathering late results. Therefore we are prepared to have the Alexander operation make a poorer showing. The immediate results of the Alexander operations were 92 per cent. good, as against 100 per cent. good for the suspensions. The remote results of the Alexander operations were 79 per cent. good, as against 93 per cent. good for the suspensions. Hernia followed the Alexander operation in 3 per cent., and the suspensio-uteri in 1.7 per cent. Twenty-five per cent. of the subjects upon whom the Alexander operation was done who became pregnant had tedious labors. No tedious labors after the suspensio-uteri operation have been noted. One of each class of patients had excessive pains during the early months of a subsequent pregnancy. One-third of the Alexander subjects had the uterus retroverted after labor. In the suspension cases the statistics as to this fact are defective. Only one patient was known to have had retroversion following labor.

Pains in the scars have been noted after certain of the earlier Alexander operations, and rarely these pains have persisted a considerable length of time. These may be contrasted with the drawing sensation noted after some of the suspension operations, but the drawing sensation has never been of more than temporary duration. After neither operation was there interference with micturition, and neither operation was the cause of abortion or miscarriage.

GENERAL CONCLUSIONS. (1) The Alexander operation is preferable to the suspensio-uteri operation because it seeks to

support the uterus by its natural ligaments. (2) The Alexander operation is indicated in retroversion, retroflexion, and retroposition without ovarian disease. (3) In retroposition with tight utero-sacral ligaments posterior colpotomy for the purpose of dividing the tight ligaments may be performed with advantage, together with the Alexander operation. (4) In ovarian prolapse, especially if the ovarian ligaments are long, the Alexander operation cannot be depended on to raise the ovaries into a normal position. (5) One round ligament is not sufficient to maintain the uterus in place. (6) The Edebohls' operation, although requiring a longer time for its performance than the operation at the external ring, is the preferable operation, because by it, the round ligament being uncovered in the entire length of the inguinal canal, there is less likelihood of its being broken; also, because it does away with the need of anteverting the uterus bimanually in the course of the operation; and finally, because of the secure manner in which the ligament is anchored and the inguinal canal closed, making subsequent hernia impossible. (7) Although the Alexander operation leaves two scars on the abdomen, they are so situated as to be covered by the pubic hair, and are subsequently less of a disfigurement than is one scar in the median line. (8) The suspensio-uteri operation is indicated in retroversion, retroflexion, and retroposition with ovarian or tubal disease, whether inflammatory affections or prolapse. (9) The best method of performing the suspension is by means of absorbable ligatures passed through the anterior and upper portions of the fundus uteri and through the parietal peritoneum and transversalis fascia only. Thus an elastic band is created between the parietes and the uterus which maintains the uterus in place and does not cause interference with the enlargement of the anterior fundus during subsequent pregnancy. (10) Suspensio-uteri leaves but one weak spot in the abdominal parietes predisposing to hernia, instead of two, as in the Alexander operation. (11) In the great majority of cases, neither operation

is the cause of complications in a subsequent pregnancy. Whatever complications occur in a small percentage of the cases are not of a serious nature. (12) In all cases of doubtful diagnosis in which the condition of the ovaries and tubes cannot be determined accurately the suspensio-uteri operation is to be preferred to the Alexander operation.

